

## WHAT IS CLAIMED IS:

1. A method of assessing a state of a plant comprising:
- (a) collecting data pertaining to at least one plant related parameter over a predetermined time period; and
- (b) analyzing said data collected over said predetermined time period to thereby identify a trend in said data over at least a portion of said predetermined time period, said trend being indicative of the state of the plant.
2. The method of claim 1, further comprising the step of correlating said trend to an additional trend derived from data pertaining to an additional plant related parameter collected over said predetermined time period.
3. The method of claim 1, further comprising the step of correlating said trend to at least one environmental parameter data acquired prior to or during said predetermined time period to thereby determine said state of said plant.
4. The method of claim 1, wherein said trend represents a positive change in a value of said at least one plant related parameter, a negative change in said value of said at least one plant related parameter, or no change

in said value of said at least one plant related parameter over said at least a portion of said predetermined time period.

5. The method of claim 1, further comprising the step of graphically representing said data pertaining to said at least one plant related parameter over said predetermined time period.

6. The method of claim 1, wherein said data pertaining to said at least one plant related parameter is selected from the group consisting of leaf temperature data, flower temperature data, fruit surface temperature data, stem flux relative rate data, stem diameter variation data, fruit growth rate data, leaf CO<sub>2</sub> exchange data and stem elongation rate data.

7. The method of claim 3, wherein said at least one environmental parameter data is selected from the group consisting of air humidity data, air temperature data, solar radiation data, a boundary diffusion layer resistance data, wind speed data, soil moisture data, and soil temperature data.

8. The method of claim 1, wherein said step of collecting data is effected by at least one sensor positioned on, or in proximity to, said plant.

9. The method of claim 1, wherein said step of analyzing said data is effected by a processing unit.

10. A system for assessing a state of a plant comprising:

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- (a) at least one sensor positioned on, or in proximity to, the plant, said at least one sensor being for collecting data pertaining to at least one plant related parameter; and
  - (b) a user client being in communication with said at least one sensor, said user client being for receiving and optionally analyzing said data collected from said at least one sensor over a predetermined time period to thereby identify a trend in said data over at least a portion of said predetermined time period, said trend being indicative of the state of said plant.

11. The system of claim 10, wherein said communication between said user client and said at least one sensor is effected via a communication network.

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12. The system of claim 10, further comprising a display being for displaying said data collected from said at least one sensor over said predetermined time period.

13. The system of claim 10, further comprising at least one device being in communication with said at least one user client, said device being for modifying said state of said plant.

14. The system of claim 13, wherein said device is selected from the group consisting of an irrigation device, a fertigation device and a climate controller.

15. A method of assessing a state of a crop comprising:
- (a) selecting a first plant, said first plant being representative of the crop;
  - (b) collecting a first set of data pertaining to at least one plant related parameter of said first plant over a predetermined time period; and
  - (c) analyzing said first set of data collected over said predetermined time period to thereby identify a trend in said first set of data over at least a portion of said predetermined time period, said trend being indicative of a state of said first plant and thus the state of the crop.

16. The method of claim 15, further comprising:

- (d) selecting a second plant, said second plant being a reference plant to said first plant;
- (e) collecting a second set of data pertaining to at least one plant related parameter of said second plant over said predetermined time period; and
- (f) comparing said first set of data and said second set of data to thereby verify that said first plant is representative of said field crop.

17. The method of claim 15, wherein said step of selecting said first plant is effected according to at least one selection criterion.

18. The method of claim 17, wherein said at least one selection criterion is selected from the group consisting of height of a plant, number of leaves, number of fruits, number of flowers, fruit size, and number and length of shoots.

19. The method of claim 16, wherein said step of selecting said second plant is effected according to said at least one selection criterion.

20. The method of claim 15, further comprising the step of correlating said trend to an additional trend derived from data pertaining to an additional plant related parameter collected over said predetermined time period.

21. The method of claim 15, further comprising the step of correlating said trend to at least one environmental parameter data acquired prior to or during said predetermined time period, to thereby determine the state of said first plant and thus the state of said crop.

22. The method of claim 15, wherein said trend represents a positive change in a value of said at least one plant related parameter, a negative change in said value of said at least one plant related parameter, or no change in said value of said at least one plant related parameter over said at least a portion of said predetermined time period.

23. The method of claim 15, wherein said data pertaining to said at least one plant related parameter is selected from the group consisting of leaf temperature data, flower temperature data, fruit surface temperature data, stem flux relative rate data, stem diameter variation data, fruit growth rate data, leaf CO<sub>2</sub> exchange data and stem elongation rate data.

24. The method of claim 21, wherein said at least one environmental data is selected from the group consisting of air humidity data, air temperature data, solar radiation data, a boundary diffusion layer resistance data, wind speed data, soil moisture data, and a soil temperature data.

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25. The method of claim 15, wherein said step of collecting said first set of data is effected by at least one sensor positioned on, or in proximity to, said first plant.

26. The method of claim 16, wherein step (e) is effected by at least one sensor positioned on, or in proximity to, said second plant.

27. The method of claim 15, wherein step (c) is effected by processing unit.

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28. A method of assessing the state of a crop comprising:

- (a) co-cultivating a first plant with a crop of a second plant, said first plant being more sensitive to a change in at least one environmental factor or an infection by a pathogen than said second plant; and
- (b) monitoring at least one parameter associated with said first plant to thereby assess the state of said crop.
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